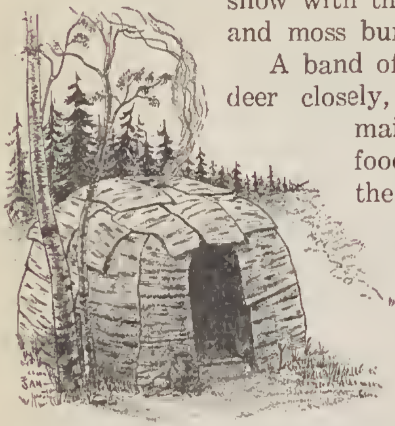
FIELD MUSEUM
STORIES

Wigwams of the Woodland Indians

Series XXXVII, No. 1
October 4, 1941
Looseleaf No. 46

WIGWAMS OF THE WOODLAND INDIANS

A blanket of snow lay on the hills and meadows, and the trees in the forests were draped in white. Deer wandered through the country searching for food. They had to dig through the snow with their sharp hoofs to find the grass and moss buried underneath.



A band of Woodland Indians followed the deer closely, for in winter they depended mainly on these animals for their food. The men watched the tracks in the snow. They could tell when they were close to the deer, for the hoof prints would be sharp, showing that they had been freshly made.

The men decided upon a camping place near a brook which would provide fresh water to drink. It was sheltered with trees which would protect the house from the cold winter winds.

Everyone started to work. The men cut ten or twelve long pliable poles with their stone axes and stripped off the branches. The children gathered dry sticks for firewood and the women unpacked the loads which they had carried on their backs during the long journey in search of the deer. They took out bark boxes of dried corn and berries and some pieces of deer meat and started to prepare the dinner.

When the men came back with the poles everyone helped to build the house. The poles were stuck in the ground in a circle and the tops were bent over and tied with rawhide thongs to make the dome-shaped framework of the wigwam. Then mats made of several large pieces of bark sewed together were spread over the framework. They were neatly overlapped so that there would be no cracks through which the wind could blow. Ropes of rawhide were stretched over the house and pegged down so that the house would not blow away. At the top a hole was left through which the smoke could escape, for the fire was to be built in the middle of the house on the ground, which served as a floor. Another hole was left in the side of the house and a deerskin was hung over it for a door.

The Indians spread woven mats and skins on the earthen floor around the fire, and, after a good supper, wrapped themselves in warm skins and lay down on the floor to sleep.

For several days they stayed in this camping place, the men hunting the deer with their bows and arrows, and the women preparing the skins which they brought home.

When after a time the deer had wandered far away in their search for food, the Indians decided to move camp closer to the deer. The bark mats which covered the wigwam were unfastened and rolled into bundles. The belongings were packed in skin bags, and, each person carrying his share, the band walked on to look for a new place to camp, where they set up the wigwam as they had done before.

Through the long winter they lived this way, picking up the house and moving it every few days. When the warm weather finally came they returned to the village where in summertime they and several other bands of Indians lived together. The frozen earth had thawed and it was time to plant the corn and pumpkin seeds in the fields.

In the village they lived with some other families in a large bark-covered house, made in the shape of a rectangle. All day long they worked in the fields, or gathered wild seeds, nuts, and berries to be dried and packed away for winter.

When winter came again they left the village and once more separated into small bands, living in the portable wigwams during the hunting season.

Most of the Woodland Indian tribes lived in this way, hunting in winter and living in wigwams, farming in summer and living in the big houses in villages. Some used mats of rushes or cat-tail stems to cover their houses, others used the bark of trees, that of the birch, elm, ash, or hickory. The wigwams were usually round or egg-shaped. Sometimes they were small, but often they could hold as many as twenty or thirty people.

People often confuse the wigwams of the Woodland Indians with the tipis of the Plains Indians, but it is easy to remember the difference, for the wigwams were dome-shaped and covered with bark or mats, and the tipis were tall pointed cone-shaped tents covered with buffalo hide.

ELIZABETH McM. HAMBLETON
Raymond Foundation

NOTE: There are models of both the summer houses and the wigwams of the Woodland Indians in Hall 4, also some mats made of cat-tail stems used in building the wigwams.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

The American Bison or Buffalo

FIELD MUSEUM of NATURAL HISTORY
FOUNDED BY MARSHALL FIELD 1893
CHICAGO

Series XXXVII, No. 2
October 11, 1941

Looseleaf No. 47

THE AMERICAN BISON OR BUFFALO

In the days when wolves grew fat on buffalo stragglers, and cowbirds, walking amongst the great herds, clacked their bills at the flies, the buffaloes followed the grass over almost one third of North America, ranging far up into Canada, down into Mexico, and from New York to Oregon beyond the Rocky Mountains. Almost never, with the exception of the sick or very old individuals, were they found as solitary animals. Usually they stayed in small scattered groups of bulls or of females and young ones, but at certain times of the year they would come together in thousands for breeding or migration. It was probably not a true migration, for they moved only a few hundred miles south, far enough to reach easier grazing with the coming of cold weather; then went northward once more to find new grass and avoid the heat at the return of spring. At periods of traveling the herd was rather definitely organized into a front and center of watchful cows mixed with young animals, and a rearguard of bulls. Their slender race-horse legs carried the shaggy-headed, heavy bodies about with considerable speed and the wall of dust marking their path would often rise over the prairies long before the herd itself could be seen.

It is during the spring or later on in the summer that the calves are born, usually singly. In some ways the buffalo calf resembles the young of our domestic cattle more than it does its own parents, for its coat is a light sandy brown and there is no hump over the shoulders. By the time the calf is two months old, however, the hump that gives the head the low-pitched hang of the adult has appeared, and by fall the young hair has been shed and replaced by the dark brown-black of the older animals. For the first year, or perhaps somewhat longer, the calf follows by the side of its mother, but later it leaves her and runs on its own with the herd. The buffalo keeps on growing until its seventh or eighth year, and, unless some disaster overtakes it, lives to the age of twenty-five or thirty years.

Each spring the buffalo loses its heavy winter coat in great ragged clumps, so that by summer the whole body, except for head and front-quarters, is almost naked. Then clouds of flies and mosquitoes appear and swarm and feast on the bare buffalo flanks in spite of the alert cowbirds. To escape these hundreds of needle-bites, and also to help remove the remaining dead hair, the buffalo rolls in the dust or throws itself in wells of mud that leave an armor of clay over its body. These wallows, over a long period of use, gradually become larger and deeper and they were a common sight on the plains when the buffaloes were abundant.

At that time the buffaloes were the Indians' source of supplies —food, clothing, and tools. From the skins came moccasins, shirts, and lodge coverings; from the sinews, thread and bowstrings; from the hoofs, glue; and from the horns, spoons and ornaments. With the coming of the Europeans the picture changed, for as the long wagon trains rolled west over the borders of Ohio, Tennessee, and Illinois, the buffalo either galloped ahead or fell to the settlers' guns. At first the white men more or less followed the practice of the Indians in killing the animals only as needed; later they were taken for the price their tongues and hides would bring in the eastern markets. As the rifle and railroad worked westward over the prairies, shooting and shipping became easier. Around 1870 the twenty-five cents for each buffalo tongue and the dollar for a hide offered by eastern dealers spurred the hunters on so that by 1890 the herds, as the Indians knew them, were gone forever and the Indians themselves, deprived of their living, had been pushed into government reservations. At their lowest the numbers of buffalo dropped to less than one thousand, but in the past forty years careful protection by law has raised that count to some twenty thousand in private or government herds. This is only the shadow of the one-time many millions whose disappearance was a chief cause of the Indian wars of yesterday and whose hoofs laid the routes to the west followed by the Baltimore and Ohio and the Union Pacific railroads today.

Elizabeth Best
Raymond Foundation

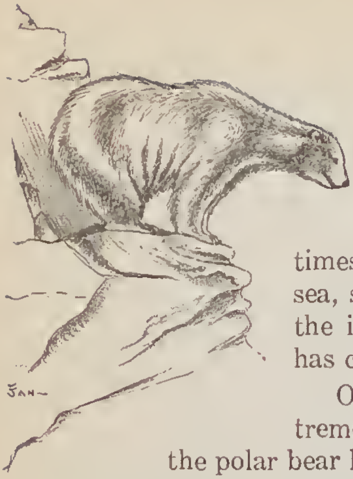
Note: Examples of the American bison or buffalo are in Hall 16.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Arctic Giants—Polar Bears

Series XXXVII, No. 3
October 18, 1941
Looseleaf No. 48



ARCTIC GIANTS—POLAR BEARS

Along the edges of arctic lands and in the waters that touch them, live the polar bears. Usually they stay on the loose ice-floes near shore, but many times they can be seen swimming far out at sea, seventy or eighty miles from land, where the ice, driven by wind and water currents, has carried them.

One of the very few animals to stay extremely light-colored the whole year through, the polar bear has a coat of thick, well-oiled fur which is actually white only when the bear is very young, and yellowed during the rest of its life. The grown bear is a large animal weighing anywhere from seven to nine hundred pounds, with flat, stub-nosed head, rather long neck, and very short tail. Both on land and in the water, it gets about remarkably well considering its size, for it can run faster than a man and can swim for short spurts as much as six miles an hour. In the water most of the work is done with the front feet, while the hind ones drag motionless behind. Almost the entire under part of each foot is covered with hairs, so that as it walks up and down on the ice the chances of slipping are small.

The polar bear is principally a meat feeder, except in late summer, when it eats quantities of sea-weed, berries, grass, and mosses. The remainder of the year, however, animals make up most of its diet. It lies in wait for seals near their breathing holes and when they make an appearance stuns them with a blow of its paw; or it creeps up as they sleep on an ice-block and falls on one of them unawares. It also devours walruses, fishes, shrimps, and birds when they can be caught. The bears seem to have particularly keen noses and wherever a dead whale is washed up on shore, there gather sometimes as many as twenty or more bears, drawn from miles away by the scent of spoiling meat.

The bears are not the only hunters; they in turn are hunted by man. In other days, any and all times were open season for polar bears, and an arctic adventurer would sometimes kill several hundred of the animals. Often the fur and meat of only a few of these would be used and the rest of them left untouched where they lay. Waste on such a large scale no longer exists today, for the Canadian government now protects these animals and thus saves them from extinction. At the same time, a valuable fur supply is preserved for man, for during the winter, white foxes trail after the bears and feast on the bits of bone and meat left by their more powerful neighbors. Were the polar bears gone, so too would be the source of fine white fox pelts. The Eskimo is probably the greatest enemy of the bears today, though, unlike the white man, he uses what he kills rather than wastes it needlessly. The fur is made up into choice robes and rugs, as well as trousers and boot soles.

During the spring and summer, which in the arctic is the long period of daylight from March to September, the bears feed heavily, and by the time of severe cold weather, a thick layer of fat lies stored under their skins. In November and December the males and some of the females travel and hunt amongst the ice-floes in the open sea. The rest of the females move inland where each searches out a well-protected spot in the snow and there hollows out a den. Kept warm by her coat of fat and fur, she sleeps through the winter storms that, blowing above her, seal up her sleeping room until, except for a small breathing hole, it is quite air-tight. Some time around January the young, usually two, are born in the den, where their mother lies in a stupor. At the very first the cubs are little larger than rats, blind, and almost hairless. When, however, with their mother, they finally break out of the den in March and for the first time see the sunlight, they are almost the size of foxes. Cared for by their mother they grow rapidly until by the next autumn they are well able to live alone and hunt along the drifting ice.

ELIZABETH BEST
Raymond Foundation

NOTE: In Hall 16 several polar bears can be seen.

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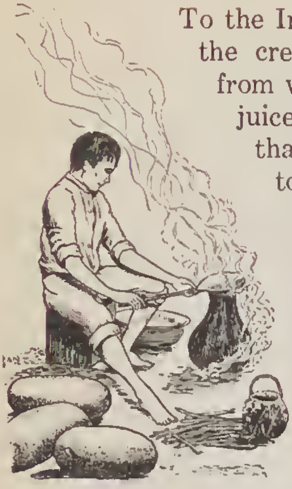
FIELD MUSEUM STORIES

Rubber from America

Series XXXVII, No. 4
October 25, 1941
Looseleaf No. 49

RUBBER FROM AMERICA



To the Indians of tropical America must be given the credit for the first utilization of the latex from which rubber is made. Latex is a milky juice exuding from certain plants. It is said that when Columbus made his second visit to the New World he found the Indians playing with balls made of crude rubber. The Europeans were amazed at the elasticity of the substance and the manner in which the balls bounced when dropped. So really the first use of rubber, as far as we know, was for balls.

John Priestly, the English chemist, used the strange substance for rubbing out pencil marks, and thereafter it was known as rubber. Practically worthless a hundred years ago, rubber now ranks as a commodity of prime importance. Although rubber-producing trees have been cultivated only during the past fifty years the use of rubber in modern industry has increased constantly, until today it is regarded as one of the principal forest products of tropical regions.

Our country uses two-thirds of the rubber produced in the world today, and until recently 85 per cent of this was used for tires and inner tubes. Rubber could not have reached its present usefulness had it not been for the work of Charles Goodyear, who in 1839 successfully vulcanized it. Vulcanization is a process in which other materials, usually including sulphur, are combined with the rubber; the final product is harder and more durable. Vulcanized rubber can be used for many more purposes than untreated rubber.

Almost all of the world's rubber is obtained from a Brazilian tree, the Pará rubber tree, a native of the dense forests flanking the Amazon River. To the botanist this tree is known as *Hevea brasiliensis*, a member of the Spurge family. Only a small quantity of rubber is now gathered from trees growing wild on the Amazon. The bulk of the world's supply is produced on plantations in the East Indies and Malay Peninsula where the Hevea tree has been introduced and flourishes as well as in its native habitat. In the past few years it has been planted on the Tapajoz River, in the lower Brazilian Amazon.

Many plants yield latex that dries as an elastic substance, but the product of most of them is of little or no use. Rubber from various sources differs greatly in its properties so that it cannot all be utilized for the same purposes. Latex, a plant sap, flows through minute tubes or elongated vessels which lie in the soft inner bark close to the vital wood layers. Unless great caution is taken when cutting the bark the tree may easily be permanently injured. Incisions made in the bark open these tiny vessels and the latex oozes out and drips into a cup which has been fastened at the base of the tree.

Smoke from fire built of palm nuts produces a good cure for the rubber. A paddle is dipped in the liquid rubber and a layer of latex is picked up which is hardened by exposing it to the smoke of the fire (*see illustration*). The heat drives off the water and layers of rubber accumulate on the paddle to form a large ball. Crude rubber balls ready for export may weigh from twenty to one hundred pounds. Plantation rubber is coagulated with chemicals.

There are other rubber-producing plants of some note in the new world, besides the Pará rubber tree. The Andean rubber tree, *Sapium,* yields an inferior product. Castilla or Mexican rubber, commonly found in Central America, was once cultivated on a fairly considerable scale. Its latex is greatly inferior to the Pará rubber. Consequently the plantations established in the past have been abandoned.

Ceará rubber, a close relative of the cassava plant from which tapioca is produced, is furnished by a plant growing in the arid regions of northeastern Brazil.

A North American rubber plant which is not a tree but a small shrub is of interest as a good source of rubber for lead-pencil erasers. "Guayule" grows wild in the arid regions of northern Mexico and southwestern United States. The rubber is scattered throughout the entire shrub and, to remove the rubber, the plant is macerated and washed in water.

Balata of northern South America is the source of a non-elastic substance used for machine belting. Another latex commonly known as chicle is the base of chewing gum, while the latex of the so-called "cow-tree" of Venezuela is much esteemed by the Indians for caulking canoes.

MARIE B. PABST
Raymond Foundation

NOTE: Halls 28 and 29 have exhibits of the various rubber-producing plants.

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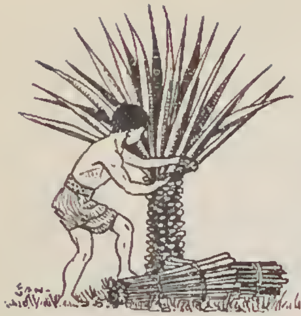
FIELD MUSEUM STORIES

Mexican Magueys

Series XXXVII, No. 5
November 1, 1941

Looseleaf No. 50

MEXICAN MAGUEYS



Cutting maguey leaves

Among the strange plants found in the desert region of southwestern United States and northern Mexico are the agaves. Agaves are thornless, with long, stiff leaves, and they blossom but once during their lifetime. Some agaves grow more than fifty years before blooming. In this country agaves are known as century plants; many Mexican varieties are called magueys.

It is frequently mistakenly believed that century plants bloom once every hundred years. The century plants blossom but once during their lifetime and their flowering period varies with the particular variety of plant, the climate, and the soil. Several months before the blossom appears, food in the form of sweet sap collects in the center leaves, causing them to become juicy and plump. This food supply is used by the flower stalk, which grows very rapidly, sometimes five or six feet a day. Century-plant blossoms more than thirty feet in height have been found. After the seeds have been formed the plant dies.

The leaves of the magueys are fibrous and stiff, ending in a sharp spine. The natives of Mexico have learned to utilize these leaves in the manufacture of a variety of textiles and cordage. Some of the cords and ropes manufactured by modern Mexicans and used for industrial purposes are henequen, sisal, and ixtli (Tampico fiber).

The sisal hemp of Yucatan has become the most important export commodity of that region of Mexico. Annually more than twenty million dollars' worth of sisal fiber enters the United States to be twisted into binder twine for holding the sheaves of cut grain. The International Harvester Company, which imports Mexican twine, says that "if the supply of twine for one harvest were suddenly to be cut off, it would mean not simply a national, but an international calamity, as it would be impossible to secure help enough to gather the crops." More than 150,000 tons of twine are required annually to bind the world's grain crops, and much of this twine comes from Yucatan.

The Indians of Mexico have learned to utilize all the various parts of agave plants for practical purposes: the thorns are made into needles; the flower-stalks are used for lances, rafters, and fences; the leaves are utilized for thatch and fuel, and as a source of fiber made into textiles, cords, and papers; the young leaves contain a mildly irritating juice useful as an antiseptic; the roots are a source of soap; and the heart of the plant is the source of *pulque,* and is also cooked and eaten as a vegetable.

Pulque, the fermented alcoholic beverage made from maguey, is often called the national drink of Mexico, although it is confined mostly to the region about Mexico City. Another variety of maguey, grown in northern Mexico, is the source of *mezcal.* In southern Mexico, *tequila,* made from another maguey, is popular. *Mezcal* and *tequila* are alcoholic beverages prepared by fermentation and distillation of the juice from the maguey.

The process of cultivating the maguey and extracting the milk or sweet sap is unusual. In the central region of Mexico where the soil is often too alkaline and arid for any other crop there are large maguey plantations. The young plants begin as offshoots of roots during the blooming period of the parent plant. These are cultivated as small independent shoots for several years and then transplanted. In six to ten years they are mature and the development of the leaves indicates the imminence of the flowers. The farmer who raises maguey cuts a hole in the central bud with a curved sharp-edged knife and scrapes out a hollow. The juice collects in this hollow and from three to nine quarts of liquid are removed each day until the blooming period passes. The sap flows for six or eight months and then the plant dies.

MARIE B. PABST
Raymond Foundation

NOTE: In Hall 28 is a case showing the products manufactured from agave fiber, in Hall 8 there are examples of Mexican use of ixtli fibers, and in Hall 25 is a specimen of *tequila,* the distilled liquor.

Century plant in bloom

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FIELD MUSEUM STORIES

The Horned Lizard

Series XXXVII, No. 6
November 8, 1941

Looseleaf No. 51

THE HORNED LIZARD

The horned lizards live in the belt of dry country that spreads from southern Canada through the western states into Mexico. They may be found there wherever food is plentiful, the temperature favorable, and the ground loose enough for easy digging. The natives usually call them horned toads because, at first glance, their broad bodies have less resemblance to their actual relatives, the other lizards, than to the squat, roughened shape of the toads.

Although there are about twenty different kinds of horned lizards, they are all alike in having a flattened body fringed with small spines, and a short, stout-rooted tail. The cream-colored under parts are covered with smooth scales, but the darker top side is spiked with thorn-like spines of various sizes. From the several usually long ones over the eyes and at the back of the head has come the "horned" part of their name. The colors on the back are never bright; they range from pale gray to dark red, depending on the type of lizard and the place in which it is found. Strangely enough, although these lizards tend to match the color of the particular piece of ground on which they live, they apparently can not vary if moved to a different location. The main changes are only a lightening or darkening of the hue.

The horned lizards are protected in several ways from enemies. Not only does their coloring blend well with the sand or rock on which they rest, but once seen, their spiny covering discourages an attack. If this defense fails, they can put up a show of force by expanding until they are much flatter and broader than usual, and then lowering and pulling in the head until the array of horns at forehead and neck is in full view. Some horned toads occasionally go even further and will, if sufficiently irritated, take the offensive. In preparation for this, the eyes are closed and while they are shut, blood collects behind the upper eyelids until they are swollen to several times their normal size. Then quite abruptly a ray of blood about the thickness of a horse-hair shoots from the inner corner of one or both eyes onto the attacker. After this demonstration, which lasts only a few seconds, the swelling goes down and the eyes once more open.

Along the little winding paths among the weeds and bushes, the lizards run during the cooler parts of the day to catch ants and other insects. When the day is hottest and at night they may go into the shadow of a rock or into some hole, but more often they sink into the ground. This burying method will work only in soil that is easily stirred up, for the lizard dips its nose into the sand and pushes from side to side. At the same time the legs and body flatten close to the ground and as these hollow out a trough by wriggling sideways back and forth, a blanket of sand gradually drifts over them. The fine sand is kept out of the lungs, as it rolls over the body, by small valves in the nostrils that admit only air. In late October, when the air is no longer warm and the ants stay close in their nests, the horned lizards push far deeper into the sand and stay there asleep until the next spring.

The young of all but two kinds of horned lizards are born wrapped up in a thin membrane through which they immediately make their way into the outside world. The female of the kind that lays eggs, prepares for her nest in the twilight of some July or August day by digging with her front feet a hole that slants downward about five inches into the ground. In the small globular end of this tube, she leaves as many as twenty-four eggs, not all in one mass, but in several layers with a padding of earth in between. When all the eggs have been laid, she fills up the hole so that its one-time open top is level with the surrounding earth. About forty days later the young crawl out of the egg, up through the soil, and into an active life whose length no one knows. For some weeks they have very few sharp spines, but when they reach adult growth at the end of a year they are equipped with the full set which not only protects them from other animals but keeps them from drying out in the hot desert air.

ELIZABETH BEST
Raymond Foundation

NOTE: Examples of horned lizards can be seen in Hall 18.

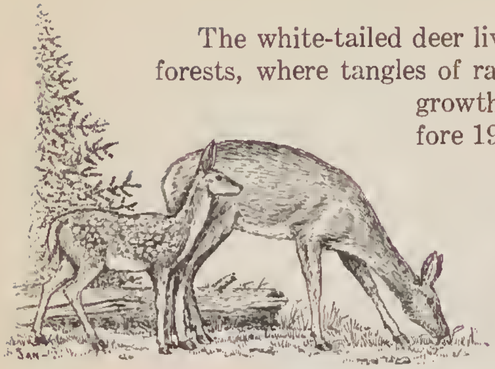
This page is for your own notes and illustrations

FIELD MUSEUM STORIES

The White-tailed Deer

Series XXXVII, No. 7
November 15, 1941
Looseleaf No. 52

THE WHITE-TAILED DEER



The white-tailed deer live at the edge of woods and forests, where tangles of raspberry and young second-growths meet the large trees. Before 1900 they were found in great numbers throughout much of the United States, but now they are plentiful only in parts of New York, Michigan, and northern New England, as well as Florida and Texas.

Except when it wanders into a grassy opening, the deer is never a conspicuous animal, for its dull, neutral colors blend into those of the trees and bushes so that unless a twitch of its ear or tail attracts the eye, it remains a part of the background. In fall and winter its coat is brown-gray and heavy, but toward spring this is replaced by a reddish-tan one of lighter weight. The most noticeable part at any time is the patch of white hairs which, lying under the tail, flare into sight when the deer is alarmed. Although both sexes look alike in color, they differ considerably in size. The females weigh only a hundred pounds or a little over, but the full-grown males are often fifty or a hundred pounds more. The male is further distinguished by its antlers, curved branches of bonelike material that grow at the top of the skull and form a pronged crown over the head. During their growing period in late spring and summer, these are flexible and covered with a downy-haired skin that gives them a fuzzy appearance. In and under this skin run nerves and blood vessels, so that the antlers are sensitive and easily injured, but as they harden, in the early autumn, the nerves and blood vessels stop working and disappear. About the same time the deer begins to grind and polish the antlers on tree trunks or ground, until by November, the skin covering is completely gone and the antlers are finally ready for use.

November, the breeding season for the white-tail, is when the antlers are put into active service. The bucks then spend little time feeding, but much in searching out the females and battling rival males. These duels are seldom bloody, for the males fight by pushing against each other, antler to antler, until the animal proved weaker backs round and runs off. Occasionally two pairs of antlers become so locked, each with the other, that neither deer can get away and both die of starvation.

At the close of November all the deer feed considerably on nuts, leftover berries, various grasses, and leaves, so that by the first snows they have a layer of fat to give them added warmth and strength. They stay together all winter in groups of various sizes around spots where twigs and mosses are easily reached. These small areas, or "yards," as they are often called, are in time traced with well-beaten trails and often practically walled in by deep snow. When February comes, with spring close behind, the deer move out to find new and greener food. In that month the antlers of the males usually fall off, leaving them with an uncrowned head.

In June the fawn arrives. For several weeks the small, dappled animal lies concealed in the green undergrowth, sleeping or waiting for the visits of the mother. After that hiding period, it goes with her in the early morning or twilight while she picks raspberries from the vines or chews lily-pads at the lake-edge. The fawn eventually leaves its mother the next spring or somewhat later. Under her care it lives fairly secure for its first year, but after that it must protect itself from the dangers that threaten it, such as the claws of bears and panthers or the bullets of the autumn hunters.

Elizabeth Best
Raymond Foundation

NOTE: Examples of the white-tailed deer can be seen in Hall 16, the above story being reflected in four habitat groups of the deer in spring, summer, autumn, and winter.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Cod-fishing off Canada

Series XXXVII, No. 8
November 22, 1941
Looseleaf No. 53

COD-FISHING OFF CANADA

CODFISH

Fishing for cod is one of the oldest and most important industries in Canada. Codfish can be found in the north Pacific, the North Sea, and the western Atlantic from Greenland to North Carolina; they are especially plentiful in only a few parts of this range, mainly the fairly shallow waters over the Banks, the Gulf of St. Lawrence, and a short distance off eastern Canada. Edges of land, the so-called Banks, which lie submerged in two hundred to five hundred or more feet of water and in many places stretch out as far as several hundred miles from the mainland, seem to be particularly favorable to cod.

In the summer months the cod gather by the thousands on the Newfoundland Banks to spawn. Farther north the breeding season is later and to the south it is earlier in the year. The eggs are dropped deep in the ocean, but since they weigh less than the water they soon start drifting upward and float for some ten or twenty days near the surface. A female may produce five or six million eggs in a year, but not every egg hatches nor does every hatchling finally become a full-grown fish; only a few, perhaps six or seven, will not be addled by storms or eaten. For the first several months the young codlings live on the very small animals that swarm near the top of the water; later they move downward and begin to feed on the larger game near the ocean floor. By the end of three or four years the codfish has grown a foot or more and usually is mature. It can add length and poundage during the rest of its life, but only a small number of individuals survive long enough to reach the extreme of one or two hundred pounds. Most of the cod that find their way into the holds of the fishing vessels are twenty-five pounders.

Summer is the peak of the cod-fishing season, so that from June to November the Canadian harbors are heavy with the smell of fish and crowded with boats newly returned or just starting out for the spots where the cod are reported abundant. Small sail-boats or motor launches are used for the fishing done within sight of the coast, but in the long trips to the Banks off Newfoundland, a roomier vessel is needed to hold crew and cod. Fifty years ago and before, all the larger ships were sail-driven, but now, though the original schooner types are still used, auxiliary gasoline engines provide the power. The time-honored method of catching the cod over the Banks by means of lines has changed little from what it was a hundred years back. The schooner, with its fleet of six or more small, flat-bottomed dories, cruises along the Banks until a suitable place for dropping anchor and fishing is decided upon. The dories, each with its crew of two men, are then cast free and, while one man rows, it is the job of his mate to uncoil and at intervals drop overboard the heavy lines piled in the bottom of the boat. Each of these lines, weighted at one end and buoyed at the other, is thousands of feet long and from it, every two or three feet, hang smaller lines, hook-tipped and baited. Some hours later the lines are hauled up, the fish removed, hit on the head, and thrown in the bottom of the boat. At the end of the day the mother ship picks up the dories and their catches and after perhaps many days has enough cargo to head back into port.

Getting the cod successfully out of the ocean is only the first part of the whole process of sending them to market. Aboard ship the fish are usually beheaded, cleaned, and stowed in the hold of the vessel. If they are to be sold as fresh, they are then covered with ice, and remain so until they reach the fish-market. If, as is more common, they are to end up as salt-cod, they are packed in layers of salt until the boat touches shore. There, sometimes with the help of the fisherman's whole family, the fish are pulled out and spread to dry either on the roofs of small buildings or on wooden platforms. Each fish is turned over every twenty-four hours, and if the air and sun are favorable all are dried and hard within a week. Packed and shipped to the dining tables of Canada itself, South America, the United States, the Mediterranean countries, or the West Indies, the codfish is probably the best known of all the fishes taken from the sea for food.

Elizabeth Best
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Note: Examples of codfish can be seen in the Hall of Fishes.

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FIELD MUSEUM STORIES

Egypt and the Nile

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EGYPT AND THE NILE

The God of the Nile

High up in the mountains of Africa, in Abyssinia and Uganda, lie the sources of the River Nile. When the rain falls and the snow melts on the mountain sides, the small trickling streams swell to rushing torrents and tumble down the slopes into the valleys. In some places there are cataracts and rocky gorges or stretches choked with thickly matted water plants. These rivers make their way over the plains, other rivers joining them, until they flow as one stream into the Mediterranean Sea, almost 4,000 miles from the sources.

The White Nile and the Blue Nile, the two most important of these tributary rivers, join near the city of Khartoum to form the main stream of the Nile. The pale gray waters of the White Nile, which rises near Lake Victoria, mingle with the clear blue ones of the Blue Nile, which flows from Abyssinia to meet it.

At the headwaters of the Nile, the land on either side of the river is flooded during the rainy season from July to October. In the arid country of Egypt the Nile is the only source of water for crops, and the people welcome the flood, for their lives depend upon it. Long ago the Egyptian farmers built earth embankments to hold the flood waters on the fields, but today great dams and reservoirs hold back and store some of the water in flood time and release it when it is needed for irrigation. The farmers dig canals through the fields and direct the river water into the canals. Sometimes they use wooden cranes, called "shadoofs," to lift the water from the river. Often a camel or a donkey is harnessed to a wheel and as he plods around in a circle he turns the wheel which dips bucketfuls of water from the river and empties them on the land. In these fertile fields grow wheat and cotton—the main crops of Egypt.

There are many kinds of fish in the rivers. Water fowl used to nest in the swampy lands, among them the long-billed ibis which was sacred to the ancient Egyptians. Long ago, crocodiles lurked in the marshes and fat hippopotamuses wallowed in the mud, but the swamps have been drained and nowadays there are no ibises or crocodiles or hippopotamuses in the land of Egypt.

From the marshes the ancient Egyptians also used to obtain the papyrus reed from which they made paper. They used brushes made from reeds for their picture writing. Since the swamps have dried up, papyrus too has disappeared from Egypt.

From the cliffs along the river came red granite and the white limestone from which the Sphinx was carved and the Great Pyramids were built. Huge blocks of stone, often carried many miles downstream on rafts from the quarries, were used in building temples, palaces and tombs.

The Nile has always been Egypt's great highway. Boats of all sizes plied up and down the river—little ones made from bundles of reeds, sail boats, and even ocean-going vessels. Wood was scarce, since the climate was too dry for most trees, except the date palm. Much wood had to be imported from the forests of central Africa or the Near East to build the large rafts and boats needed for trade and transportation.

From earliest times the Egyptians have realized the importance of the River Nile. They worshipped the Nile God and held a ceremony in his honor every year at the time of the flood. They knew that but for the river the Valley of the Nile would be a barren desert.

Elizabeth McM. Hambleton
Raymond Foundation

Note: In Hall J there is an ancient Egyptian wooden boat, paper made from papyrus, and reed writing-brushes, also pictures of the pyramids and the Sphinx. In Hall 22 there is a hippopotamus.

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of the pyramids and the Sphinx. In Hall 22 there is a ippopotamus.